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humble logician to point out various flaws in the argument.

I believe the Egyptologists do not accept the Zodiac of Denderah and the inferences of Biot as unreservedly as Professor Lockyer. The ethnologists will, I understand, raise many objections to Professor Lockyer's hypothesis of a change of race and religion. Mythologists will surely rebel against his treatment and interpretation of myths. Astronomers will point out how *many* stars there are and how few temples, so that it may not be so very difficult, given several hundred years of leeway, to choose a star to fit a temple. Plain people will ask how it is that a temple is, so to say, dedicated to one star and oriented by another. Sirius was the *star* related to Isis, Mut and Hathor. But the temples of these deities are not invariably oriented by Sirius. *Gamma Draconis* is a rather faint star. Why were not brighter ones selected?

After raising these objections and a crowd of others that might be brought forward, it remains that Professor Lockyer's book is a contribution of high value and merit. A question of importance has been plainly put. The method of solving it has been described in popular language. The data now available has been brought to the notice of everyone. If Professor Lockyer has done little more than this, and if his principal conclusions still call for further confirmation, he deserves the thanks of all concerned in these questions—and who is not?

EDWARD S. HOLDEN.

*Song Birds and Water Fowl.* By H. E. PARKHURST. New York, Scribners. October, 1897. Illustrated by Louis Agassiz Fuertes. 12mo, pp. 286. Price, \$1.50.

If there is any truth in the law of supply and demand, the present flood of popular bird literature must be taken as evidence of an extraordinary if not unprecedented interest in the subject of birds and nature. It is a healthful interest and one which awakens and develops some of the better elements in our natures which are apt to lie dormant.

Mr. Parkhurst's 'Song Birds and Water Fowl' is not intended as an aid to the identification of specimens, but belongs rather to the class of popular nature studies. A fair idea of

the contents may be had from the chapter headings, which are as follows: A Boquet of Song Birds; Water Fowl; A Bird's-Eye View; Mistress Cuckoo; Sea Swallows; Bird's Nests; At the Water's Edge; Lake George; A Colony of Herons; Earliest Signs of Spring.

The book is illustrated by eighteen admirable full-page drawings by Fuertes.

C. H. M.

*Birdcraft, a Field Book of Two Hundred Song, Game, and Water Birds.* By MABEL OSGOOD WRIGHT. New York, The Macmillan Co. November, 1897. With 80 full-page plates by Louis Agassiz Fuertes. 8mo, pp. 317. Price, \$2.50.

The second edition of Mrs. Wright's 'Birdcraft' is a pleasant surprise. The cheap chromos of the first edition are replaced by a colored frontispiece and eighty full-page half-tone plates from original drawings by Fuertes, the powerful young bird artist who has so suddenly sprung into fame. Most of these drawings have recently appeared in 'Citizen Bird,' by the same author and Dr. Elliott Coues (noticed in SCIENCE of November 5, 1897, p. 706).

Since the text of the second edition of 'Birdcraft' is printed in the main from the same electrotpe plates as the first, it is only necessary to refer to the review of the former (SCIENCE, June 7, 1895, p. 635), with the additional statement that the principal errors there mentioned have been corrected. The book in its present form is attractive, interesting and helpful and should be in the library of every lover of birds.

C. H. M.

*Magic Stage Illusions and Scientific Diversions, Including Trick Photography.* Compiled and edited by ALBERT A. HOPKINS, with an introduction by HENRY RIDGELY EVANS. New York, Munn & Co. 1897. With four hundred illustrations. Large 8vo. Pp. 556. Price, \$2.50.

The associations of the term magic are hardly suggestive of scientific processes or principles; they are more apt to call up an atmosphere of mystery and secret knowledge, a world of the

unexpected and the unfathomable. But the magic of to-day bears quite as conspicuously as many of the applied arts and crafts the marks of the laboratory and the research room. Nineteenth century magic reflects the evolution of nineteenth century science and can look back with an air of condescending amusement or curious interest upon its old-time antecedents, much as the modern chemist reads the annals of alchemy or the superbly equipped astronomer contemplates the vagaries of the mediæval astrologer.

There is, indeed, much to interest the student of science in the elaborate performances of the prestidigitateur and the illusionist; and the interest is two-sided, physical and psychological.

The physical interest centers in the description of the true *modus operandi* of the tasks and the accompanying paraphernalia; the psychological interest in the method of arousing false perceptions and inferences and producing the conviction that the impossible has happened. The student of the psychology of deception takes his place with the audience and observes how readily their attention is diverted at critical moments, how easily they overlook the apparently insignificant but really essential settings of the trick, how the bewilderment increases and the critical faculties lapse as one bit of sleight-of-hand succeeds another. The student of the curious and intricate applications of science must be stationed behind the scenes and observe at times how simple a contrivance evades detection, or, again, how an elaborate combination of mechanical principles is ingeniously applied to produce a startling effect. The main lesson which the psychologist takes away is the importance of the attitude in creating belief, the dominance of cleverly suggested expectation in our sense experience, the readiness with which we substitute inference for observation and go away convinced and deceived. The physicist or the mechanic is quite certain to be impressed with manifold possibilities of mystification which the rapid increase of science brings in its train.

This ably compiled volume will appeal to both types of readers as well as to the more popular interest in mysteries and the processes of deception. It is wide in scope, treating of conjuring

tricks of all varieties; of jugglers and fire-eaters; of puppets and shadow dances; of ventriloquism and second sight; of the application of science to stage effects and cycloramas and fireworks; of automatic and scientific toys; of the kinetoscope and the vitascope, and the varied applications of photography; and in addition to all this some interesting information upon the conjuring tricks and performances of olden times. The tone of the descriptions is clear and the volume is well adapted to satisfy the needs of the somewhat heterogeneous class of readers who are likely to consult it. Moreover, the book is distinctly modern, and avoids both the unnecessarily popular and frequently irrelevant style of much of this kind of literature. It comes as nearly within the pale of science as any book with this kind of a purpose can be expected to reach. A valuable bibliography and index add much to its usefulness.

JOSEPH JASTROW.

#### SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES—SECTION OF BIOLOGY—NOVEMBER 8, 1897.

THE meeting was called to order by Professor Wilson, the Chairman. Twenty-two persons present. After reading the minutes of the previous meeting, the following program was presented:

Mr. Matthews reported on analyses of spermatozoa in Kossel's laboratory, Marburg. Sperm of *Arbacia*, herring, pig and bull were examined. Herring sperm heads were separated from the tails by Meischer's method, and made free from albumen. They consisted of protamin nucleate, having the formula  $C_{40}H_{54}N_{14}P_4O_{27}$ ,  $C_{30}H_{57}N_{17}O_6$ . The nucleic acid appeared identical with that of salmon sperm (Meischer), although the protamin differed from salmon protamin, as shown by Kossel. The sperm tails consisted chiefly of a combination of lecithin, cholesterin and albumen, similar to, but not identical with, similar constituents of salmon sperm tail. The tails contained no nuclein. The heads contained no lecithin nor cholesterin. *Arbacia* sperm contained nucleic acid, but no protamin, instead of which a histon-like body was present. It is probable that *Arbacia* sperm chromatin is an histon nu-